4.5 Cultural Resources

SIGNIFICANCE CRITERIA

The significance criteria discussed below are pursuant to the regulations identified in Section 3.5 of this document. The regulations include:

- National Historic Preservation Act of 1996, as amended
- American Indian Religious Freedom Act of 1978
- Executive Order 13007
- Executive Order 12898
- National Environmental Policy Act

Federal law requires the consideration of effects to historical and cultural resources prior to authorizing any activity. 36CFR296 (Protection of Archaeological Resources) and 36CFR800 (Protection of Historic and Cultural Properties) provide guidelines for the protection of cultural resources, while state law requires the protection of historical and cultural resources. A proposed action would be considered to have a significant effect on cultural resources if it adversely affects a resource listed or determined to be eligible for listing on the National Register of Historic Places (NRHP). The proposed project would have a significant effect if it damaged the integrity of an identified sacred site or interfered substantially with Native American religious or ceremonial practices.

METHODOLOGY

The impacts assessment for cultural resources and traditional cultural values is based the results of literature searches, consultations, and cultural resource surveys performed for the proposed project. The results of the studies are presented in two archaeological reports (Vaughan 2001 and Darcangelo 2002).

IMPACT OVERVIEW

A survey conducted in 2001 by Coyote & Fox identified obsidian flakes along the originally proposed pipeline route. That route was approximately 5,200 ft. and ran through dry farmland and wetlands. The route was initially altered to avoid the identified site then altered again to avoid wetlands. A second survey conducted by Far Western Anthropological Research Group, Inc. (FWARG) in October 2002 found no other cultural resources. Additional areas surveyed were the food service/laundry building and mechanical building. No traditional cultural uses were identified that would be affected by the proposed project. The proposed project would not have adverse effects on cultural resources or traditional cultural values.

EFFECTS OF THE PROPOSED ACTION – ALTERNATIVE A

Potential impacts to cultural resources in the project area are described for each project component.

Mechanical and Food Service/Laundry Buildings

The proposed project would include construction of two new buildings within the residential area of the I'SOT community. The footprint for these buildings was surveyed by FWARG and no cultural resources

were noted. Buried resources are not expected in this area. There would be no impact to cultural resources from construction of these buildings.

Distribution Piping

Spot checks were made by FWARG for the distribution piping locations, as these locations consisted predominantly of graveled driveways leading to existing structures, leaving no original ground surface to inspect. The likelihood of finding buried resources in this area of previous disturbance is low. No cultural resources would be impacted from installation of the distribution piping; therefore this construction of this project component is less than significant.

Discharge Pipeline

The proposed project would include installation of an effluent discharge pipeline along dry farmland, 1,300 ft. of levee road, and some wetland area. The pipeline route was surveyed for the presence of cultural resources. No resources were found along the pipeline route. Excavation for installation of the pipeline has the potential to affect previously unknown cultural resources. Mitigation measures 4.5-1, 4.5-2, and 4.5-3 would be implemented to avoid the potentials for adverse effects to undiscovered resources and undiscovered human remains. The potential for discovery of buried resources is considered low since much of the pipeline route has been subject to previous surface disturbance for agriculture and road construction.

Hand laying the discharge pipeline along proposed route would have no effect on cultural resources.

NATIVE AMERICAN CONCERNS AND EFFECTS TO TRADITIONAL CULTURAL VALUES

Native American Concerns

During scoping for the project, members of the Pit River tribe expressed concerns about geothermal-related impacts and potential effects of construction on cultural resources. The projected environmental impacts of the proposed district heating project are discussed throughout Chapter 4 of this document. The environmental effects of geothermal resource development and utilization of the well for space and water heating are less than significant. Initial consultation between the Pit River tribal members and DOE resulted in a request for a tribal monitor during construction activities. This action was agreed to and is incorporated as Mitigation Measure 4.5-1. Additional mitigation measures would be implemented if cultural resources are found during construction activities.

Project Effects on Traditional Cultural Properties

There are no Traditional Cultural Properties (TCPs) within the project study area; therefore, the project would have no impact on TCPs.

Native Americans have been known to use Kelley Hot Springs. The project would have no effect on Kelley Hot Springs and no effect on traditional uses at Kelley Hot Springs.

MITIGATION MEASURES

Mitigation Measure 4.5-1

During excavation activities for pipeline installation I'SOT would hire a tribal monitor to be in attendance to check for any cultural resources or human remains. Mitigation to avoid effects to resources encountered would include avoidance or data collection.

Mitigation Measure 4.5-2

Should any prehistoric or historic resources be encountered during site construction activities, construction activities within 50 feet of the discovery would be suspended until a qualified consulting archaeologist and the tribal monitor in attendance has assessed the materials. If a decision is made to record the site, recordation shall take place and it will be determined whether project component could be relocated to avoid any additional effects. Construction activities in the vicinity of the discovery would not resume until consultation has taken place and the resources have been appropriately evaluated or treated and specific authorization to resume construction activities is provided by the DOE. If avoidance is not feasible, a qualified archaeologist will evaluate the site and a determination of eligibility for the NRHP shall be made. If the site is determined to be eligible, then a mitigation proposal (which may include a data recovery program similar to those conducted for similar resources in the vicinity) shall be submitted with the site record to the SHPO for review and concurrence. If the site is potentially eligible, mitigation would be designed and implemented in consultation with SHPO.

Mitigation Measure 4.5-3

If prehistoric archaeological deposits that include human remains or objects considered "cultural items" according to the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during site construction activities, the County Coroner and a qualified archaeologist would be immediately notified and NAGPRA regulations shall be followed. If the remains are identified as Native American, then local Native American groups or tribe(s) and the Native American Heritage Commission (NAHC) are required to be notified within 24 hours and consultation will be initiated. The most likely descendants of these remains would be notified and given the opportunity to make recommendations for the remains. If descendant recommendations are made which are not acceptable to the operator or the DOE, then the NAHC would be requested to mediate the problem.

EFFECTS OF THE NO ACTION ALTERNATIVE

If the project were not constructed due to lack of DOE funding, there would be no adverse effects to cultural resources from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). The following measures would not be implemented without DOE involvement: 4.5-1, 4.5-2 and 4.5-3. Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.

4.6 Land Use, Agriculture, and Recreation

SIGNIFICANCE CRITERIA

A land use impact resulting from a proposed action or alternative may be significant if it conflicts with established land uses in the area, disrupts or divides established land use configurations, represents a substantial change in existing land uses, or is inconsistent with adopted land use plans. Direct impacts are those that directly conflict with the land use around a proposed project, for example, the construction of a multi-family residential development in an area designated for agriculture.

Impacts to recreational resources could be considered significant if they result in a decline in the quality or quantity of existing recreational facilities or services, or if they exceed adopted state or local (or other generally accepted) recreation planning standards.

METHODOLOGY

The impacts assessment for land use, agriculture, and recreation are based on information provided by the Modoc County General Plan and US Department of Agriculture. The project impacts were reviewed for consistency with plans and regulations set by these agencies.

IMPACT OVERVIEW

The proposed project would not result in any permanent change to an existing land use. Construction of the mechanical building and the food service/laundry building would occur on private property owned by I'SOT. Building design would be compatible with the existing buildings on the property. Installation of the distribution piping and discharge pipeline would result in minor, temporary disturbance to the I'SOT community property, dry farmland, the levee road, and a small portion of wetlands. Trenching for the pipeline installation would occur over 20-30 days and vegetation would be replaced to its former condition (see Section 4.3, Biology).

The operation phase would not change any existing land use from pre-construction conditions. I'SOT has applied for and received a Use Permit from Modoc County for the use of the geothermal well and development of the district heating system.

EFFECTS OF PROPOSED ACTION – ALTERNATIVE A

Existing Land Uses

The proposed action would not be expected to conflict with existing land uses or with American Indian uses in the vicinity (see Section 4.5, Cultural Resources).

The proposed action would occur on relatively small sites on privately owned property and would therefore not be considered to represent a substantial alteration of the present land uses in the areas.

Noise generated by implementation of the proposed action would not be expected to adversely affect other land uses in the vicinity (see Section 4.7, Noise). In addition, the proposed action would not be expected to emit odors that would adversely affect other land uses (see Section 4.1, Air Quality), and would not be expected to result in adverse visual effects (see Section 4.9, Aesthetics). There are no established recreation uses in the project vicinity; therefore the proposed action would not adversely affect recreation uses.

Effects on Agriculture

The predominant use of the land associated with the discharge pipeline route is dry land cattle grazing. Due to the short duration of construction for the pipeline installation, effects on rancher's use of the land would be minimal and temporary in nature.

Effects on Recreation

There are no formal recreation areas within the project area. The project would have no impact to recreation uses.

Consistency with Plans

Modoc County General Plan. The proposed action would be consistent with the goals and policies of the Modoc County General Plan for land use, agriculture, and recreation. The district heating system operation would be compatible with the residential land use designation of the I'SOT community and Canby. Construction and operation of the pipeline would not affect the use of the land for agricultural purposes. The project encompasses several parcels located around the township of Canby. Tables 4.6-1 and 4.6-2 indicate the project parcel numbers, zoning designation, and general plan designation.

Table 4.6-1: Zoning Designations

Zoning	Assessor's Parcel Number
Industrial	017-060-56
Low Density Residential	017-080-02 & 25, 017-090-10 & 63
High Density Residential	017-090-57, 61, 62, & 64
Commercial	017-100-22
Unclassified	017-160-75

SOURCE: Modoc County 2001

Table 4.6-2: General Plan Designations

General Plan	Assessor's Parcel Number
General Agriculture	017-060-56
Exclusive Agriculture	017-160-75
Urban Area	017-080-02 & 25, 017-090-10, 57, 61, 62, 63, 64, 017-100-22

SOURCE: Modoc County 2001

The construction and operation of the district heating system at the I'SOT Community would not conflict with the Modoc County zoning ordinance or general plan designations as shown in the above tables.

MITIGATION MEASURES

The effects of the proposed action would be less than significant. No mitigation is required.

EFFECTS OF NO ACTION ALTERNATIVE

If the project were not constructed due to lack of DOE funding, there would be no adverse effects to land use, agriculture, and recreation from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.

4.7 Noise

SIGNIFICANCE CRITERIA

The Noise Element of the Modoc County General Plan (Modoc County 1988) identifies a maximum noise level 60 dBA L_{dn}[1] for residential uses. The Noise compatibility standard on Modoc County is 54 dBA L_{eq}[2], based on an L_{dn} of 60 dBA. A noise effect would be considered significant if the level of noise from operation equals or exceeds 54 dBA L_{eq} at the receptors.

METHODOLOGY

Noise analysis for the proposed action is based on projected emissions from construction and operation compared against existing conditions. Noise emissions are assumed to attenuate at a rate of 6 dB per doubling of distance. Surrounding receptors are considered and impacts to these receptors are based on projected source emissions and the assumed rate of attenuation. Measures to minimize noise emissions are recommended as applicable.

IMPACT OVERVIEW

Construction would have temporary significant impacts on receptors within the ISOT community. Measures are recommended to reduce emission levels during construction. Operational noise emissions would not be significant.

EFFECTS OF ALTERNATIVE A

Construction Noise

Operation of heavy equipment would be the primary source of noise during the construction of the food service/laundry and mechanical and control buildings. Surrounding receptors would be affected during construction hours (daytime hours) for about 3.5 months. Implementation of Mitigation Measure 4.7-1 below would reduce noise emissions from construction equipment.

Conservative estimates of noise emissions from constructing the distribution and discharge pipelines are presented in Table 4.7-1. Pipeline construction would significantly affect receptors within the I'SOT community as well as agricultural workers within just over 200 feet of the construction activities.

Operation Noise

The district heating system is anticipated to have a 40- to 50-year life cycle. Any noise emissions resulting from project operation would last as long as operations take place. All noise emissions would affect only the occupants of the I'SOT community on a regular basis for the duration of the project.

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[1] L_{dn}, the day-night average noise level, is based on human reaction to cumulative noise exposure over a 24-hour period. L_{dn} accounts for community receptors' greater sensitivity to unwanted noise intrusion during the night. Noise between 10:00 p.m. and 7:00 a.m. is weighted by 10 dBA to take into account the greater annoyance of nighttime noise.

[2] L_{eq}, equivalent steady-state sound level, is a single value of sound level for any desired duration that includes all time-varying sound energy occurring during the measurement period.

Table 4.7-1: Estimated Peak Pipeline Construction Noise Emissions

		Distance from Equipment & Noise Level (dBA) at Receiver		
Construction Phase	**Loudest Equipment**	**50 ft**	**100 ft**	**200 ft**
Clearing/grubbing	Bulldozer	85	79	73
Trenching/earthwork	Bulldozer/backhoe	80	74	68
Positioning Pipe	Sideboom/tractor	85	79	73
Backfilling	Bulldozer/backhoe	85	79	73

NOTE: Assumes a basic sound level drop-off rate of 6.0 dB per doubling of distance.

SOURCE: Federal Transit Administration 1995

Geothermal Well. A 7.5-hp electric lineshaft turbine well pump would push geothermal fluid through mechanical equipment designed to extract energy in order to heat 53,000 ft^2 of residential housing. An open, drip-proof motor set at the surface would power the pump. This motor would be located inside a removable 8 x 6-foot building attached to the main mechanical building. The motor would be housed and noise would thus be muffled. Noise emissions from the motor would not be significant.

Backup Boiler System. The backup boiler system would be located in the mechanical and control building. Noise emissions from the boiler would not be significant.

Water Circulation Pumps. The two water circulation pumps would be located in the mechanical control building. One pump would be used at a time and the other would be used for backup. The pumps for water circulation would be sized for up to 80 gpm each with three-horsepower high efficiency inverter motors. The pumps and motors would be housed and noise would thus be muffled. Noise emissions from the pumps and inverter motors would not be significant.

Traffic Noise

Traffic noise would be induced during the construction phase of the project. Vehicles associated with construction would generate intermittent noise throughout the vicinity of the proposed action. Vehicle noise would occur sporadically during weekdays and daytime hours for 3.5 months. The project noise would not represent a significant increase in noise.

Noise Effects on Animal Species

During construction activities, some animals may avoid habitats in the vicinity of the proposed project due to the increased noise levels, particularly if a species is sensitive to a frequency range that the construction activities would generate. Any avoidance of habitats in the vicinity of the proposed project by wildlife species during construction would be temporary and not significant. Section 3.3 Biological Resources provides a listing of the species in the project vicinity. Noise impacts during operation would be less than significant.

MITIGATION MEASURES

Mitigation Measure 4.7-1

Muffler systems shall be used on all heavy equipment during construction activities.

Mitigation Measure 4.7-2

As required by the Modoc County General Plan, building permits for the project shall be submitted to the Modoc County Planning Department for review for consistency with the noise element and other elements.

EFFECTS OF THE NO ACTION ALTERNATIVE

If the project were not constructed due to lack of DOE funding, there would be no adverse effects related to noise from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). The following measures would not be implemented without DOE involvement: 4.7-1 and 4.7-2. Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.

4.8 Infrastructure and Service Systems

SIGNIFICANCE CRITERIA

The project would have a significant effect on the environment if it would:

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Have insufficient water supplies available from existing entitlements and resources, or need new or expanded entitlements
- Be served by a landfill with insufficient capacity to accommodate the project's solid waste disposal needs
- Violate federal, state, and local statutes and regulations related to solid waste
- Result in the failure to maintain acceptable service ratios, response times or other performance objectives for any of fire protection, police, health, school and park services

METHODOLOGY

This analysis was performed by evaluating available data, information, reports and personal communications. These materials are listed in Section 7.0, References and in Section 6.0, List of Preparers. No additional data collection or field investigations were performed.

IMPACT OVERVIEW

Project impacts on infrastructure and service systems would be less than significant with the implementation of the district heating system. The goal of the proposed action is to reduce dependence on the use of costly propane gas by the I'SOT community. Implementation of the proposed system would allow I'SOT to use renewable geothermal energy for space heating and water heating. This is a beneficial effect of the project.

EFFECTS OF THE PROPOSED PROJECT

Water

As detailed in Section 4.10, Socioeconomics, implementation of the proposed project would not result in an increase in population, and would therefore not cause an increase in potable water use.

Wastewater

As detailed in Section 4.10, Socioeconomics, implementation of the proposed project would not result in an increase in population, and would therefore not cause an increase in municipal wastewater generation. None of the geothermal effluent will be discharged to the existing wastewater treatment system at I'SOT. I'SOT has obtained an NPDES permit form the Central Valley Regional Water Quality Control Board for the discharge of geothermal effluent to the Pit River. The permit contains monitoring

and sampling conditions that I'SOT must comply with to insure that water quality would not be impaired by the discharge.

Make-up water will be drawn from the on-site groundwater well to replace the volume of hot water drawn for domestic use from the distribution pipelines. The use of this make-up water would not result in an increase in wastewater generation.

Stormwater

The construction of the mechanical building and the food service/laundry building would decrease the amount of permeable land on the project site. This increased area of impermeability would be insignificant compared to the area of permeable lands surrounding the buildings both on and around the project site.

Electricity

The combination of the 7.5 horsepower pump (hp) in the geothermal well and the 2.5 hp circulation pump would cause an increase in electricity demand for the I'SOT community. In year 2000, the Surprise Valley Electrification Company (SVEC) was consulted regarding these power needs associated with the mechanical and control building. In August 2000, SVEC installed an additional power pole to meet the proposed increased demand (Merrick 2002b).

Solid Waste

As detailed in Section 4.10, Socioeconomics, implementation of the proposed project would not result in an increase in population, and would therefore not cause an increase in municipal solid waste generation.

The granulated activated carbon (GAC) mercury removal system would generate mercury-contaminated GAC, which may be classified as hazardous waste. I'SOT has a service agreement with US Filter who will service the filters, change the carbon, and place the spent carbon into Department of Transportation certified drums. US Filter would take a sample and submit the spent carbon to a laboratory for mercury analysis to determine which reactivation or disposal method is most appropriate (King 2002a).

Carbon with sufficiently low mercury content would be sent to US Filter reactivation facilities. Low mercury content carbon would be sent to the US Filter West States non-hazardous reactivation facility in Red Bluff, California. Higher mercury content carbon would be sent to the US Filter West States hazardous reactivation facility in Parker, Arizona (King 2002b). These activities are part of normal business operations for US Filter and would not affect solid waste disposal services in Modoc County. Carbon with mercury content too high for acceptance at the US Filter West States reactivation facilities would need to be either landfilled or incinerated. If the carbon is classified as non-hazardous, it would be sent to the Canby Transfer Station, then to the Alturas Transfer Station, and then ultimately to the Lockwood Landfill near Reno, Nevada (Hironymous 2002a). Carbon considered hazardous would likely be sent to the Kettleman Hills Landfill, in Kettleman City, California (Hironymous 2002b; King 2000c). The Lockwood Landfill, operated by the Reno Disposal Company, has a projected lifespan of 23 years (Franchi 2002). The Kettleman Hills Landfill has a projected lifespan of 6 to 7 years, with an additional 300 acres permitted for future landfill use (Vasquez 2002). The proposed project would not have a significant impact on waste disposal capacity at either the Lockwood or Kettleman Hills landfills.

Emergency Services

As detailed in Section 4.10, Socioeconomics, implementation of the proposed project would not result in an increase in population, and would therefore not result in an increased demand for fire protection, police protection, health or educational services.

MITIGATION MEASURES

The effects of the proposed action would be less than significant. No mitigation is required.

EFFECTS OF NO ACTION ALTERNATIVE

If the project were not constructed due to lack of DOE funding, there would be no adverse effects related to infrastructure and services from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.

4.9 Aesthetics

SIGNIFICANCE CRITERIA

The project would have a significant effect on the environment if it would:

- Noticeably increase visual contrast and reduce the scenic quality rating, as seen from any high sensitivity foreground or middleground viewpoint;
- Block or disrupt existing views or reduce public opportunities to view scenic resources; or
- Cause visual resource conditions resulting that would conflict with policies and regulations governing aesthetics.

A direct visual impact would be the disruption of a scenic view attributable to a proposed project. An example of this would be the construction of a new four-story office building in a mixed-use residential/commercial area such that the new building would block panoramic views of scenic resources from existing residences and/or introduce new light sources. Cumulative effects can result from individually minor but collectively significant actions taking place over time.

METHODOLOGY

The aesthetics analysis in this section is based upon current scenic conditions from the project area roadways, as well as from any potential vantage points in the project area. Project construction would take place both north and south of State Route 299. In addition, a directional bore for the 3-inch discharge pipeline would be constructed beneath SR 299 at Post Mile 22.30. Other county roads adjacent to the construction of the food service/laundry building and mechanical building are County Road 161 and County Road 203 respectively.

IMPACT OVERVIEW

The proposed action would not have a permanent, adverse effect on scenic or visual resources in the vicinity. The proposed action would be of short duration with no tall structures or equipment used during construction. The project elements that would be visible after construction include one small new building and one larger building within the interior of the I'SOT property, surrounded by existing buildings.

EFFECTS OF PROPOSED ACTION – ALTERNATIVE A

Long Range Views

The Region of Influence (ROI) can generally be limited to five miles, beyond which distance features lose defining details. The construction activities would be visible from a distance, but not prominent due to the small crews that would work on the project.

The proposed pipeline would be buried and not visible after construction activities. The proposed buildings would be adjacent to several existing buildings. The views from a long-range distance would not be substantially affected, as it may be difficult to distinguish the new buildings.

Short Range Views

Motorist traffic and pedestrians traveling along the county roads and Highway 299 would view construction within the project area during the approximately four-week construction period. The activities would occur in the early spring when tourist traffic is less than during the summer. Construction of the discharge pipeline would be adjacent to County Road 54 within I'SOT-owned dry grazing land and up to 1,500 ft away from the road. See the photo in Figure 3.9-1 for the view from County Road 54 to the pipeline construction area. Construction activities would be performed between 6 a.m. to 9 p.m. during daylight hours so that no additional lighting would be required. Disturbed areas would be revegetated with plants similar to those in adjacent areas. Construction activities would be of limited duration so that effects to visual resources would be less than significant.

The mechanical building and the food service/laundry building would be designed using construction materials and colors that blend with the natural surroundings to minimize the visual contrast with the surrounding landscape. Lighting would be designed to keep glare at a minimum. The project would not result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The project operational elements would not be visible from Highway 299. The project would not conflict with the Visual Resource Quality objectives in the USDA Guidelines or the policies Modoc County General Plan. The effects of the proposed project on aesthetics would be less than significant.

MITIGATION MEASURES

No mitigation is required.

EFFECTS OF NO ACTION ALTERNATIVE

If the project were not constructed due to lack of DOE funding, there would be no adverse effects on aesthetics from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.